Effectiveness of Formal and Informal Institutions in Managing Agricultural Land in Rural Sri Lanka

Hansamali Amarasinghe

Abstract

Institutions establish the rights to use resources efficiently for economic activities. Thus, this study focus on how institutions, specifically property rights for land, have induced utilisation of limited factor endowment, particularly land for achieving maximum productivity. Various land institutions exists as survival strategies of the farmer community, allowing farmers to manipulate the existing land regulations and mobilize the land resources, so as more efficient farmers have access to large land extents to cultivate, thus improve the productivity. Furthermore, the study found that farmers with a formal land deeds do not necessarily achieve higher land productivity. But, conservation of land resources and use of them efficiently for achieving high productivity are largely depending on the informal institutional factors rather than formal institutions.

Key words: Formal Institutions, Informal Institutions, Land Productivity, Property Rights

I. Introduction

Institutions are the rules and constraints that shape economic interaction. They include formal laws and rules and their enforcement mechanisms, but also customs, norms and traditions. It is widely acknowledged that “institutions matters” for economic development. Property rights for example, are the result of the interplay of formal law and customary norms, often part of the local culture. Customary norms evolve slowly, and are deeply embedded in behavioural patterns, which assist the formation of informal institutions.

Institutions engender the rights to use resources for economic activities: “institutions provide *assurance* respecting the actions of others, and give order and

stability to expectations in the complex and uncertain world of economic relations." (Runge,1981:595). If a disequilibrium is perceived by the community regarding resource allocations due to constraints or pit falls of formal institutions, it creates incentives for informal institutional innovations, i.e. evolutions in customary norms.

According to North (1991), institutions improve productivity by lowering transaction and transformation costs. Institutions that lowered transaction costs are those that enabled the parties to exchange to specify and define the multiple valuable attribute of a good or service or the performance of agents or to enforce agreements at lower cost. Institutions that have lowered transformation costs have been those that have made possible the introduction or application of an improvement in technology. Institutions that lowered transaction costs mainly focus on 1) increase the mobility of capital; 2) lower information costs; 3) spread risks; and 4) improve the enforcement of contracts.

Institutions continue to evolve in response to changes in resource endowments. Institutions such as property rights and markets are more typically altered through the accumulation of "secondary" or incremental institutional changes such as modifications in contractual relations or shifts in the boundaries between market and non-market activities (Davis and North,1971: 9). Ruttan and Hyami (1984: 203 - 223) illustrate, from agricultural history, changes in resource endowments and technical change have induced changes in private property rights and in the development of non-market institutions. They also highlights that in other cases, where externalities are involved, substantial political resources may have to be brought to bear to organize non-market institutions in order to provide for the supply of public goods.

In this regard, this paper draws an example from an agricultural village in rural Sri Lanka to illustrate how formal and informal institutions, specifically property

rights for land, have induced changes in factor endowment, and productivity in the locale. It examines how informal institutions evolve as an alternative for formal institutional constraints, and the effectiveness of both of these institutions in managing the agricultural lands in the locale.

II. Methodology for the Study

The Kiriibbanwawe Irrigation Unit[1], in was selected for the study. First wave of resettlement in the locale were carried out in early 1950s`. The area was provided with new irrigation facilities recently under a Japanese ODA funded project. Data collection was carried out using (i) a series of questionnaire surveys, (ii) interviews with resource persons, (iii) case studies, and (iv) secondary data collection. Stratified random sampling was carried out, demarcating the irrigation canals as the main strata. A sample of 106 settlers was selected for the study, covering 25 percent of the total population and interviews were carried out using a structured questionnaire.

a) The Analytical Framework

Under a perfect market condition, allocation of land resource is associated with productivity gains for its beneficiaries, since they gain an asset. Evidence shows that resettled farmers have better access to inputs and government services (Deininger et al., 2002; Jowah, 2005), which could give them a productivity advantage. On the other hand, markets in Sri Lanka, like in most developing countries, are imperfect

[1] Development of the Walawe basin, a large-scale irrigation, resettlement and rural development project was initiated in the 1950s as some of the first in the wave of agrarian settlements of the post-World War II period in Sri Lanka. The project was conducted in several stages, where the Asian Development Bank funded the initial phase. Udawalawe reservoir water is conveyed to two irrigation canals: the Right bank main canal (RB) and the Left bank main canal (LB). It is divided in five major blocks demarcated for the convenience of administration by the Mahaweli authority: Chandrikawewa, Murawasihena and Angunakolapelessa on the Right Bank and Kiriibbanwawe and Sooriyawawe[1]on the Left Bank. Kiriibbanwawe Irrigation Block, which is located in the middle of the LB, has four irrigation units. They are Habaraluwawe, Kiriibbannwawe, Habaralugala and Mahagama. Kiriibbanwawe irrigation unit was selected for this field survey. The sample survey was conducted during 2006 March/April.

which could negatively impact farm investments and subsequently farm productivity. This implies that the effect land redistribution on productivity among its beneficiaries is ambiguous.

The right to use the land property can be gained formally or informally (as will explain later in this paper). One interest of the study is to examine closely vis-à-vis the agricultural productivity differentials between beneficiaries' of formal property rights and informal property rights.

Agricultural productivity is a measure of the total agricultural output that can be produced from a given set of inputs. In this analysis productivity is measured as the value of total agricultural output per hectare i.e. land productivity. Land productivity is important in determining food production, land use incentives and returns to landowners. Accordingly, we specify two productivity equations for a given household as:

$$Y_j = f(R_j X_j) \quad \text{-------- (1)}$$

$$Y_j = f(K_j X_j) \quad \text{-------- (2)}$$

where、Y is the value of total agricultural output per hectare for the *j*th land lot. A land lot is defined as a contiguous piece of land on which one or more crops can be cultivated. R, in the first equation, is a dummy indicating whether or not the household obtained the land lot via formal institutions, intended to capture whether or not formal institutional beneficiaries have a productivity advantage. K, in the second equation is also a dummy variable indicating whether the household has obtained land rights through an informal institution. X is a vector of exogenous land characteristics and inputs used. These include standard factors of production, i.e. labour used per hectare (number of family and hired workers); the household head's years of

education as an indicator of human capital; non-labour variable inputs, including the cost of chemical fertiliser and manure used per hectare; and traction power. We assume that the production function is given by a Cobb-Douglas production function such that the equation to be estimated becomes:

$$\ln(Y)=\beta_o+\beta_1 R+\beta_2 X+\varepsilon \quad \text{---------- (3)}$$

$$\ln(Y)=\delta_o+\delta_1 K+\delta_2 X+\varepsilon \quad \text{---------- (4)}$$

Where, β_o, β_1, β_2, and δ_o, δ_1, δ_2 are parameters to be estimated and ε is an error term. Ordinary Least Squares (OLS) regression will be employed to estimate a Cobb-Douglas production function that utilises the factors of production outlined above.

III. Empirical Results and Discussion

First, the formal and informal land institutions available in the locale will be outlined. Then how these institutions are influencing the production behaviour of an individual in the commune is discussed.

a) Formal Land Institutions

The patterns of land ownership and tenure in the cascade systems have been influenced by the colonial policies[2] and land related regulations and acts during the post independent period. The people in the system have Swarnabhumi, Jayabhumi titles, Land Development Ordinance (LDO) permits or are encroachers on crown

[2] The land ownership pattern in the area differs from that in many old tank villages where land often belongs to the category of *paraveni* (lands in active use when the cadastral survey was done in 1900 by the British; these lands were treated as private property from ancestral times). Absence of this type of land in Walawe cascade systems substantiates the fact that there were no communities occupying lands in this part of the country during the early parts of the British administration (Somaratne et al., 2005:27).

lands[3]. These deeds are not endowed with the total property right. Open market transaction or subdivision of the property is not allowed.

As subdivision of land is not allowed in the resettlement schemes, the second generation, who are anticipating being involved in agriculture, has only two choices. One is to cultivate their father's land. If the land holder has only one child, or only one child interested in agriculture, he can name him as the successor and the land permit provisions ensure the cultivating rights of the child. But if there are more than one descendant, they have to either share the land, compromising having the legal rights, or they have to get a lease or encroach land for cultivation, which is the second available choice. In sharing the land by the descendants, since the land area cultivated is small, it only permits subsistence farming, with little excess yield for the market. Thus leasing land and encroaching land for cultivation pose an attractive option for this new farming community.

Land Encroachment: Cultivating land without legal rights in the study area is not uncommon. Mainly, two groups of land encroachers can be identified. One is the group of farmers practicing encroached farming because they do not have access to other legal land. The other group of farmers practice encroached farming, in order to increase their land extent, in addition to their legally received land. As shown in Table 1, land encroachments of irrigated lands are greater than non-irrigated land, and most of them (68 percent) are land less farmers.

[3] A land grant is given to the owner of a land permit after one year, for an up land and after 3 years for a paddy lands. Two types of land grants are there. One is the 'Swarnabhoomy' deeds, which are issued under the Mahaweli ordinance no.22 by the Director General of MASL. The other one is 'Jayabhoomy' deeds, issued under section 19.4 of Land Development Ordinance by the President of Sri Lanka. Apart from the cultivation rights given by the land permit, consumption rights of many resources including forests, except the mineral resources, in the land is given to the owner. The owner can sell the land only under the permission of the RPM, with the preparation of the deed by an authorized Notary-of-law. This land grant can be used as collateral for many banks in taking loans.

Table 1 Distribution of Encroached Lands (Percentage)

Category	Irrigated land	Non-irrigated land
Encroachers with own land	10.2	3.1
Encroachers without own land	68.4	7.0
Encroached land leased out	3.1	3.0
Encroached land leased in	3.6	3.1
Total encroached	84.1	15.8

Source: Survey data collected during 2006 March/April

b) Informal Land Institutions

Formal land institutions impose many bureaucratic procedures towards land lease. This increases the transaction cost of leasing the land in concurrence to formal procedure. Restrictions imposed by the formal institutions towards possessing or increasing land assets have evolved informal institutional resolutions.

In the informal setting, two land exchange systems were widely practiced in the study area. These two systems are called 'Ande' and 'Badde' systems. There are not much difference between the exchange provisions of the two systems, but bade system indicates a long term land lease, where as 'Ande' system is on average only for a 2 to 3 year period. The tenants have the secure access to the field, but provide a stipulated yield as rent to the absentee land owner, in this case the land permit holder. The practice of these two land renting systems in the study area is shown in Table 2. In the 'Ande' system, mostly the land owner provides all the seed and fertilizer requirements in the study area[4]. The person holding a land permit has access to seed

[4] This differs with the most common land tenure practices in the country where, the land lord and tenant share 50:50 in seeds and fertilizer inputs and the land lord gets 25 percent of the total harvest, as been provided by the paddy land act in 1958.

and fertilizer at subsidized prices. Therefore the general practice in the area is for the land permit holder to buy the fertilizer and seed at the subsidized price and provide it to the cultivator. The yield share varies with each and every agreement with the two parties, but the average is around 750 kg per acre per season. This amount usually does not change upon yield. In the 'Badde' system, the land owner shares less responsibility as all seed and fertilizer is provided by the cultivator himself. The yield share in this system also varies according to the agreement, but the average is 700 kg per acre per season to the land owner.

Table 2 Provisions of Land Exchange Systems

Land exchange system	Terms of exchange (Cultivator: Land owner)	
Ande	Input share	100:0 (6.6)
		0:100 (11.3)
	Yield share	Rest of the Yield:758.8kg/ac
Badde	Input share	100:0 (10.6)
	Yield share	Rest of the Yield:701.1kg/ac

Note: The value in parenthesis shows the percentage of farmers practicing above systems.

Source: Survey data collected during 2006 March/April

The farmers who cultivate land under "Ande" and "Badde" systems can be identified as follows: One group consists of the first generation land holders, whose land is now cultivated by their second generation. The land holder has rented the land to his children, to cultivate and receives only the rent, for his subsistence[5]. In this case, if more than one cultivator is sharing the land, in the case the land holder has many children, the children divides the rest in equal shares. This is mainly subsistence paddy farming. The other group of cultivators is the large scale market oriented

[5] Renting out to own family members result lower rent (less than average) compared to renting out to non family members.

cultivators. Apart from cultivating their own land, they rent in nearby lands, in order to increase their scale of cultivated land, thus increase the profit.

c) Productivity Estimates

Two modes of land acquisition are identified. Specifically 1) land acquisition through formal institutions, i.e. formal land deed holders versus encroached land holders; and 2) land acquisition through informal institutions, i.e. land holders who has possessed or increased their holdings through informal institutions versus people who do not possessed land through informal institutions. Table 3 represent results from OLS estimation of Cobb-Douglas production function.

Table 3 Estimated of Production Functions

Variable	**Mode of Acquisition**			
	Formal Institution		*Informal Institution*	
	Coefficient	Standard Error	*Coefficient*	Standard Error
Ownership	0.091	0.16	0.247**	0.62
Fertilizer	0.163	0.22	0.163**	0.21
Traction	0.061	0.02	0.054**	0.02
Labour	0.481	0.11	0.514**	0.12
Land Conservation#	0.404***	0.02	0.285*	0.02
Level of Education	0.174**	0.07	0.161**	0.08
R-Squared	0.413		0.434	

Note : *Significant at 10% **Significant at 5% *** Significant at 1%

#Land Conservation was evaluated by estimating the cost incurred by a farmer for land conservation practices, either by investing in equipments or labour.

The regression revealed interesting results highlighting the insignificance of the formal land ownership and use of conventional inputs in agricultural productivity; i.e. Farmers with a formal land deed do not necessarily achieve higher land productivity than encroached farmers. Having the rights of proprietor does not significantly effect investment decisions, productivity (Place and Hazell, 1993; Migot-Adholla et al., 1991), and access to credit (Feder et al., 1988; Anderson and Lueck, 1992).

Two reasons can be stated to apprehend this situation. First, most of agrarian services including irrigation in the locale are highly subsidised in nature. Thus, the collateral benefits associated with property right may not have that much of impact, in terms of capital requirement. Secondly, the land used by the encroachers potentially is of significantly better quality. The encroachers always attempt to get the best land available for cultivation. Thus their most interested area is the reservation area[6] of the tank, where abundant water is available for cultivation[7]. These encroached farmers usually do not like to shift from their land, because they perceive that any land option available at another place is substandard to his current possession. Land encroachment in the locale is not necessarily looked at as an invasion, rather a necessity. Villagers see the encroached farmers as their peers, where some of themselves are practicing it, and view it as a practical solution for a landless farmer to be engaged in. therefore encroached farmers in the locale are not excluded from most benefits the local community are entitled to. Furthermore, the analysis highlights that, the land conservation aspects employed by the formal institutional beneficiaries (formal deed holders) are significantly better than that of the encroachers. This shows that farmers with a deed for their land have a sense of ownership of the property than their

[6] The areas immediately adjacent to the tank is allocated as a reservation and prohibited of all economic activities as a conservation act. But this area is perceived to be the most fertile.

[7] Seepage water contributes to the water availability and besides that, water is stolen (Buysse, 2002: 8).

counterparts and they are taking steps towards preserving its fertility thus protecting their property. Hence in a point of view of social and environmental benefits, this alone would justify the effort taken towards distributing formal land rights to farmers.

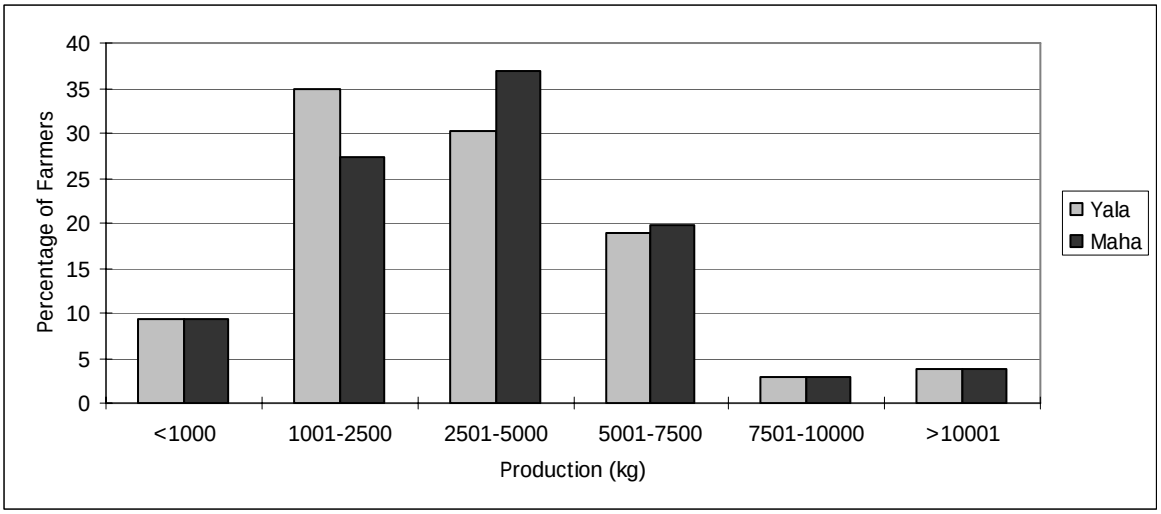
The situation differs in the case of informal institutions. Where the formal institutional beneficiaries did not show any effect towards land productivity, the informal institutional beneficiaries show significance in land ownership, agricultural inputs and land conservation activities as well as possess better human capital. The informal institutions are used as a tool to overcome the formal institutional constraint of transferability of land at the market, to acquire larger land lots. Thus it can be interpreted that farmers possessing better human capital are most likely to overcome the formal institutional constraints and exploit the available informal institutions, to manage a more efficient large scale farming enterprise.

Figure 1 demonstrates the land productivity of irrigated lands cultivated with paddy in the study area. Respondents who receive less than 1000kg per season consist mainly of the farmers who have leased out their irrigated land and receive an agreed amount of paddy, or who are cultivating a shared land without a formal deed. Thus their seasonal yield is lesser and does not vary. But the respondents with intermediate yield often are owner farmers, experiencing a yield change according to the season, with a comparatively higher yield in the Maha season[8]. Their yields are highly susceptible to water scarcity as well as other agricultural problems. On the other hand, farmers with larger yields (greater than 7500kg) are mostly farmers who have taken others lands on lease. Their yield is greater due to large land area cultivated, and varies little seasonally. These large scale farmers have the means and

[8] There are two cultivation seasons namely; Maha and Yala which are synonymous with two monsoons. Maha Season falls during "North-east monsoon" from September to March in the following year. Yala season is effective during the period from May to end of August. When the crop is sown and harvested during above periods, the particular season is defined.

resources to face common agricultural problems, such as water scarcity or insect damages. Therefore, through informal institutions the farmers were able to reduce the inherent risk of agriculture to some extent.

Figure 1 Total Paddy Productions in the Area (Including Both Seasons in 2005/06)



Source: Survey data collected during 2006 March/April

IV. Concluding Remarks

Formal ownership of land does not necessarily improve land productivity. But it ameliorates land conservation activities, as farmers with a deed for their land have a sense of ownership of the property than their counterparts. This alone would justify the effort taken towards distributing formal land rights to farmers.

Various land tenure systems exists as survival strategies of the farmer community. Although in one aspect it can be defined as highly exploitative, given the choices, the farmers perceive these as their best options available. This also allows the farmers to manipulate the existing land regulations and mobilize the land resources, so as more efficient farmers have access to large land extents to cultivate,

thus improve the productivity. But it could adversely affect the livelihood of the poorer farmers, leading to income inequalities and incidence of poverty in the community. The formal land institution has imposed restrictions to land transaction to eliminate this very fact. But the informal institutions have evolved as a tool to overcome the formal institutional constraint of transferability, to acquire larger land lots.

This emphasize the fact that social safety nets adhered to property rights by the government, to eliminate poverty incidence does not always hold. A temporary transfer of property rights is not looked upon as a demeanour to poverty, but to wellbeing. Therefore this finding warrants taking steps towards loosening some of the restrictions on transferability of land rights.

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